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ABSTRACT

This manual, the culmination of a demonstration project, is designed to aid school districts in adopting the microteaching minicourse as an inservice education program for improving specific behavioral skills of teachers. The introductory section describes the microteaching minicourse sequence of viewing an instructional and a model film, teaching a practice lesson for taping, replaying for self-evaluation, replanning, and repeating the cycle. Part 2 on planning describes a suggested school district approach to the program including a sample planning meeting agenda. Part 3 on operational procedures is an abstract of the Middle County School District (N.Y.) project, 1968-69, in which four intermediate grade teachers took "Minicourse 1, Effective Questioning in Classroom Discussion" published by the Far West Regional Laboratories. Part 4 contains technical instructions regarding training teachers in the use of audio and video equipment; included are a list of equipment for microteaching installation and diagrams of camera-microphone and studio arrangements. Part 5 on project evaluation includes analysis of specific Minicourse 1 objectives in terms of 13 variables studied in early field tests in California and six teacher behaviors analyzed in the four behavioral samples of Middle County teachers. Appended are application forms for school district participation in Minicourse 1, a paper on microteaching, and a 42-item bibliography.

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SUFFOLK COUNTY REGIONAL CENTER
For Supplementary Educational Services

Introduces

'MICROTEACHING AND THE MINICOURSE

A MANUAL

FOR PLANNING AND IMPLEMENTATION

SP004403

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Selden, New York

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Mr. Bernard Hanley - Director of Audio-Visual Services for District #11
Mr. Robert Hedges - Production Manager
Mr. Larry Livingston - School District Photographer

Particular thanks must go to George Benson, Instructional Media Teacher, who aided the technical direction of the project and wrote the technical section for this manual.

The Regional Education Center also acknowledges the many contributions of Mr. Dennis Murphy, Research Intern from Hofstra University and Mr. William Reilly, Research Trainee from St. John's University. These individuals assisted in the project, itself, and the development of this manual.

MIDDLE COUNTRY

CENTRAL SCHOOL DISTRICT NO. 11 - CENTEREACH, NEW YORK - 11720 - Area Code 516 JUniper 8-1100

JAMES HINES
SUPERINTENDENT OF SCHOOLS

FOREWORD

The art of successful teaching has long involved much more than just the use of the spoken and written word. The day of the formal lecture and the complete textbook curriculum is gone. Today's teacher has a multitude of audio-visual teaching aids that enable him to communicate at an extremely efficient level with his students.

One technique that can aid teachers in this communication is microteaching. Through the use of videotape equipment the teacher can now see his teaching and constantly re-evaluate his work.

In the Middle Country District, we have long recognized the value of audio-visual aids in the education of our children. We were one of the first to be selected for inclusion in the New York State assisted program of educational closed circuit television.

The schools in the district are well stocked with film and slide projectors, tape recorders, record players, and overhead transparency projectors. All of these are an integral and vital part of a teacher's classroom aids.

Now, as a result of technological progress, videotape equipment, until recently, a device used only for the "instant replay" has become part of the audiovisual kit.

Only through the effective use of audiovisual equipment and a constant emphasis on teacher self-evaluation for excellence in teaching will we be able to prepare children for the dynamic and ever changing world they will live in.

James Hines

James Hines
Superintendent

SCRC

SUFFOLK COUNTY REGIONAL CENTER

For Supplementary Educational Services

20 Church Street, Patchogue, New York 11772 • 516 - 289-3434

JOHN J. KEOUGH
DIRECTOR

REGIONAL DIRECTOR'S MESSAGE

In the summer of 1968, the Regional Center through its activities in gathering information on innovations throughout the United States became aware that the Far West Regional Laboratory had developed a packaged inservice course designed for districts with videotape equipment who were interested in improving teaching. It was Middle Country School District #11 that had already demonstrated their interest in instructional television and had shown by past example their willingness to try new techniques. James Hines, Superintendent at Middle Country, saw immediately that a school district must be in the vanguard as an evaluator of innovation and must provide a place where new ideas can be displayed.

Research has shown that the superintendent is a key figure in the innovation process. We are extremely grateful to Mr. Hines for his willingness and help with this demonstration of microteaching.

Mr. Irwin Sadetsky deserves a special note of thanks for providing Stagecoach School as a site for the demonstration project. The final honors, however, must go to the teachers and staff at Stagecoach. They are the ones who accept an innovation and make it lasting.

John J. Keough
Regional Director
Suffolk County, New York

Sponsored by the Boards of Cooperative Educational Services of Suffolk County and financed under a Federal ESEA Title III Grant.

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SECTION I

INTPODUCTION

The full story of the life cycle of an educational innovation is the story of its invention, development and promotion, adoption, diffusion and demise, along with accounts of the problems encountered in introducing and maintaining the innovation in specific settings and the unanticipated consequences growing out of its use.[1]

Microteaching is at the promotion stage. Stanford University originated the idea with intern teachers and the Far West Regional Laboratory, under the direction of Dr. Walter Borg saw that it had implications for experienced teachers in an inservice setting.

Will microteaching ever be adopted on a large scale basis? At this point we don't know. It is difficult enough for school districts to make a decision about what educational innovation they should adopt when faced with the tidal wave of research findings and a plethora of devices produced in the educational marketplace.

This manual is the culmination of a very small demonstration project that we feel worked. It exists to aid school districts in adopting microteaching and to allow them to benefit from some of the trial and error experimentation at Stagecoach that at times slowed the project. With this manual, you will be able to order the minicourse, select your teachers and equipment, and undertake microteaching.

Theoretical Framework

Teacher education programs, either pre-service or inservice, have been effective in preparing the teacher in specific subject matter, but many times fall short of providing teachers with specific behavior patterns that can be applied immediately in the classroom. After taking a requisite number of college and inservice courses, the teacher is left on his own to develop his own teaching style. Frequently he is successful, a tribute to man's limitless ability to adapt to new situations, but frequently he is not. It is for the latter reason that a program like Minicourse I exists. It directs itself to specific teaching skills and leaves the content to the university or school district based inservice course. In short, a minicourse is aimed at improving specific behavioral skills of teachers.

---

[1]Richard O. Carlson, Adoption of Educational Innovations (Eugene, Oregon: Center for the Advanced Study of Educational Administration, University of Oregon, 1967), p. 74.

Immediately, the critical mind begins to form questions. Why has the minicourse been chosen as the vehicle for changing teacher behavior? Is it another gimmick? Is there solid rationale for this vehicle? The minicourse owes its origin to the VTR - the videotape recorder - a machine that can record human behavior on videotape as easily as recording one's voice on a tape recorder.

Although scattered references to the VTR can be found in the literature as early as 1959, its systematic usage is a comparatively new development. Using the VTR we can now record and systematically analyze the teacher's behavior in the classroom.

Stanford University was among the first to systematically investigate the use of VTR with teacher interns. It was they who introduced the term "microteaching." Microteaching involves a scaled-down version of classroom teaching. Minicourse I uses the microteaching technique (as we will explain later).

Most of the research done with the use of the VTR and microteaching has been done with student teachers. As the results of research studies become known (and if you adopt the minicourse your evaluation will become part of the growing knowledge about the technique) initial findings encourage the use of VTR equipment for the purpose of training teachers.

Warren Kallenbach found that the results obtained with microteaching are achieved in less time and are at least equal to the usual practice teaching approach for training intern teachers.

Michael Orme, using 109 intern teachers, compared the effectiveness of symbolic modeling to perceptual modeling. In symbolic modeling the experimentor tells the subject what to do. In techniques using perceptual modeling the subject observes a film model which demonstrates the desired behavior (the minicourse uses videotapes of model teachers).

The results indicated that perceptual modeling was superior to symbolic modeling. Letting interns see model teachers appeared superior to telling them what to do.

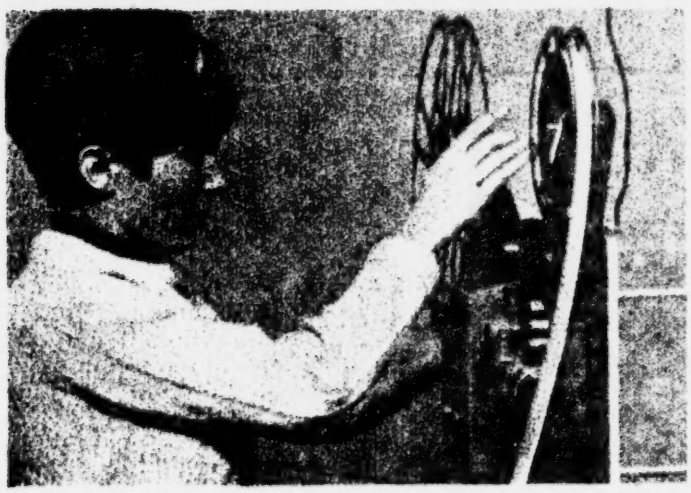
The Far West Regional Laboratory, developers of Minicourse I, field tested it with forty-eight teachers. Twenty minute samples of the teachers' pre and post classroom behavior were recorded on videotape. An analysis of the tapes yielded evidence of dramatic changes in teaching behavior.

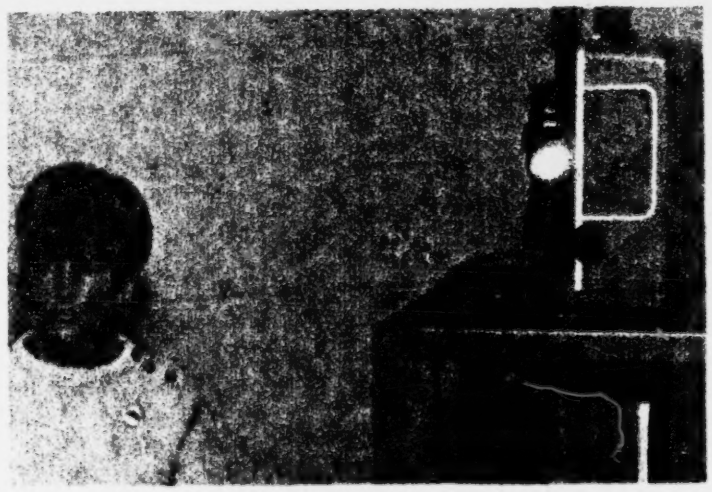
Therefore, Minicourse I comes with respectable credentials - a number of studies that suggest that this approach may be effective in changing teacher behavior.

A Pictorial Description*

Before teachers can begin the Minicourse, they must be thoroughly trained on the use of the video tape recorder, television camera, television monitor, and the 16mm projector.

Before she actually begins an Instructional sequence, the teacher views an introductory film, an instructional film (that explains a teaching skill), and a model film (that demonstrates the skill being taught).





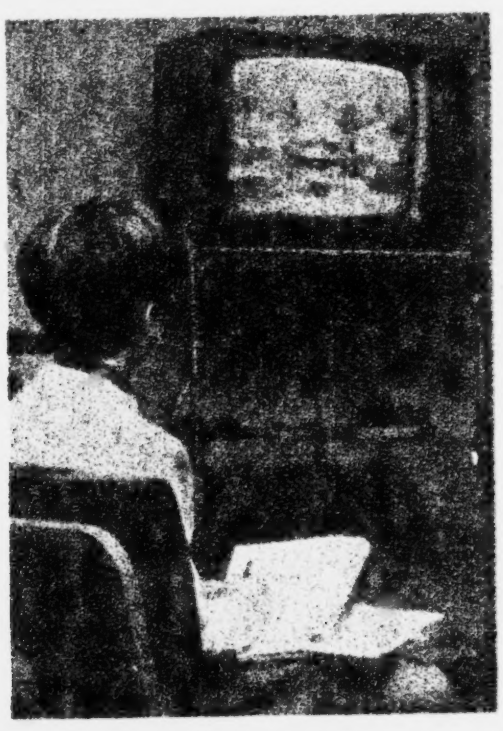
*A complete description of the microteaching process may be found in Minicourse I, Effective Questioning in a Classroom Discussion, Teacher Handbook, Published by the Far West Regional Laboratories. This booklet will be sent to you when you order your minicourse.

By now, the teacher has been introduced to the minicourse, has received her handbook and self-evaluation forms and has taught a practice lesson for taping. After viewing the appropriate instruction and model films, she now begins an actual instructional sequence.

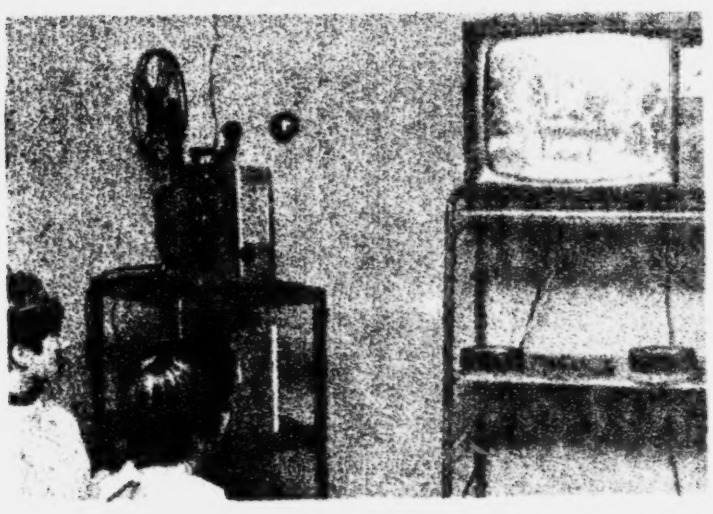
She plans a ten minute lesson the night before and then brings six students to the microteaching room. There she readies the equipment,

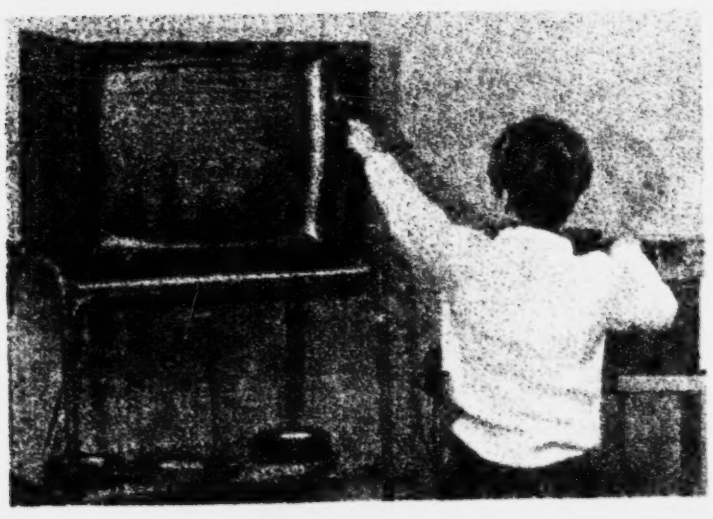
and then teaches and tapes her lesson.

After dismissing her children the teacher will view a replay of the lesson and through the use of self-evaluation forms sees if she has achieved the desired teaching goals.



She will view her microteaching lesson twice. Replan the lesson for the following day and then reteach the lesson. She will review this retaught lesson twice, and finally, review and evaluate the re-taught lesson a third time with a team mate. This completes the instructional sequence.





> Upon completion of the playback the teacher will rewind her tape and remove it from the VTR. She will open the tape gates of the VTR then turn the VTR mixer and TV receiver or monitor off.

The procedures outlined above may be used for the three stages of the course, pre-test, micro-teach and post test.

Equipment for Microteaching Installation

This would be a basic list of equipment needed for putting a micro installation into operation. A 16mm projector and screen should be part of any school's equipment but it should be listed to give a total picture. Also, a project should have two video recorders. It would be most frustrating to participants to have the equipment fail and no way to proceed.

1	Projector 16mm, Bell & Howell	$ 550.00
1	Portable screen on tripod	50.00
1	TV camera, viewfinder w/zoom lens (possibly wide-angle lens in small room situation) GBA camera...	900.00
1	Camera tripod w/dolly, and spring head Houston	150.00
2	Microphones. Sienheiser @ 85.00	170.00
1	Microphone mixer, Shure M-68	75.00
2	Video recorders. Ampex model 5100 @1,600.00	3,200.00
1	Educational TV receiver-monitor RCA model	165.00
1	Stand for TV receiver-monitor	35.00
1	Cart for VTR w/attached cord, Bretford 42E	35.00
	Miscellaneous cables and connectors for above	25.00
4	Flood lights w/clamp type holders, extension cords, miscellaneous items-repair tools, cleaning, etc.	50.00
10	Video tape 1" size, 1 hour per reel Ampex, or Memorex $50.00 per 60 minute reel	500.00
1	Portable TV receiver-monitor Sony VM-9	175.00

SECTION II

PLANNING

Personnel

The fact that you, the reader, possess this manual, indicates that someone is interested in improving teaching in the district. How many others might become involved in the planning process? Possible choices are: the superintendent, the school board, director of elementary education, director of audio-visual department, building principals, teachers, public relations man, the district photographer, students and members of the community.

When all are alerted, a formal planning meeting might be held (see Figure 1 for sample planning meeting agenda).

Figure 1 -- Sample Planning Meeting Agenda

1. Viewing of Minicourse I Introduction Film and examinations of teacher materials.
2. Discussion of general direction of the demonstration project.
3. Listing of participating teachers (both experimental and control).
4. Setting up of dates for:
   a. Prestesting of teachers
   b. Training of teachers on operation of videotape recording system and 16mm sound projector
   c. Beginning and subsequent meetings for teachers in Minicourse I.

This meeting may take many forms but it should at least include those who will actually be involved in the project:

Coordinator
Building Principal
Technician (Media Teacher, A-V man etc.)
Teachers

These personnel are essential and for this reason, a short description of each role follows.

Building Principal: Along with his other duties he must be available for the selection of participating teachers and consultation with the coordinator in setting up scheduling, making building space and equipment available, etc.

Technician (A.V. man, media teacher): He must have ample free time.

during the school day to aid teachers in the technical operation of Microteaching. He must be able to train teachers in the operation of the V.T.R. equipment and be available for setting up the room where microteaching will be held. He must be available for pre and post testing of teachers if microteaching is done on an experimental basis. He must be able to repair equipment and do minor trouble shooting and be in direct contact with the T.V. servicing company. Because teachers will be doing the microteaching during the day, it would be inadvisable to have a person who has a full teaching load and who is unable to be available if teachers need advice or equipment breaks down.

Teachers: Aside from an obvious professional interest in improving one's teaching, the teacher's chief asset will be his availability. The teacher must be ready to plan a number of lessons for videotape, be flexible enough to arrange teaching and microteaching sessions, be unafraid of T.V. equipment which may look threatening, and be available for pre and post testing.

Coordination

A major criticism leveled at research projects is the lack of an existing change agent. The coordinator is the one who enables change to take place. He aids the implementation of a project by ensuring that firm planning has taken place. He consults with central office staff, the building principal, technician, and teachers to help solve administrative and operational problems. He is also the liaison between the Far West Laboratory and the school district. Generally his is a full-time effort. However, if few teachers are involved he may be available for as little as one half the time.

Important Reminders

Teachers

1) Teachers must be able to take the course during the day. Unless the free time can be made available through flexible scheduling it is strongly urged that substitute teachers be employed to take over classrooms during microteaching sessions.

2) Teachers are urged to read all assigned materials and follow the suggested instructional sequence. Teachers should attempt to keep up with the schedule and not fall behind.

Equipment

1) Care should be taken to ensure that all equipment is properly serviced. The most devastating threat that microteaching faces is equipment breakdown.

4) If financially feasible, a substitute set of equipment should be available should there be a breakdown in the equipment while in operation.

Administration

Many projects fail because there is no one there "pushing." The coordinator or project director is essential. As a person directly responsible for the microteaching project, he will coordinate the efforts of involved groups: teachers, administrators, central office personnel, and the Far West Regional Laboratory.

SECTION III

OPERATIONAL PROCEDURES

Abstract of Middle Country School District Operational Procedures

INTRODUCTION

In meetings during the summer of 1968, the Middle Country School District and the Suffolk County Regional Center agreed to conduct a demonstration project in the "minicourse." It was agreed that a demonstration project must be undertaken to try out on a small scale the procedures to be used in a larger scale operational project that would involve many schools in Suffolk County.

Mr. Irwin Sadetsky, Principal of Stagecoach "cluster school," agreed to its use as a site for this demonstration project. The Stagecoach School is located within the Middle Country School District. For the project purposes, it offered several advantages. It contained videotape equipment within the school and had available space where video equipment could be stored and microteaching sessions held. The flexible scheduling of the teachers allowed them the freedom to participate in microteaching. In addition, Mr. Sadetsky was interested in educational research.

The rationale for the minicourse was contained in materials published by the Far West Regional Laboratory of Berkeley, California. The following report attempts to succinctly present the procedure for the pilot study.

PROBLEM

Can a teacher training course using the minicourse I model improve the use of questions by teachers in a discussion lesson?

OPERATIONAL DEFINITIONS

Minicourse I: A series of instructional films and videotapes developed by the Far West Laboratory for Educational Research and Development. Minicourse I is aimed at shaping specific classroom skills which are required by the teacher for effective teaching. In this case questioning skills form the focus for Minicourse I.

Improve: Change in a positive direction in terms of the variables measured in this study. This change will be expressed in terms of significant differences between pre and post test.

Discussion lesson: Any lesson that emphasizes verbal interaction between teacher and student rather than lecture, textbook, reading, audio-visual presentations, or other techniques.

DESIGN

Teachers: Four intermediate grade teachers from the Stagecoach School will receive inservice training in questioning techniques based on Minicourse I.

Four additional teachers from the Stagecoach School will serve as a control group in the project. They participate in the pre and post testing but not in Minicourse I (ed. note - a control group was not used at Middle Country because of various difficulties in time, space and schedule).

Students: Each teacher will use her own class when teaching lessons. When small groups of 5 to 8 children are called for, the teacher will randomly select them from her own class to take part in the lesson. On these occasions, the remaining members of the class will be re-scheduled for another activity.

All viewing of instructional films, teaching of small groups, and videotaping will be done in a room at the Stagecoach School that has been provided for this purpose. However, some recording will be done in the teacher's own classroom to gather additional data for the project.

PROCEDURES

1. The four experimental teachers will be invited to view an introduction film. This film describes the microteaching approach and its advantages. After the completion of the film, the teachers will be asked to prepare a practice lesson emphasizing questioning as a desirable skill to be demonstrated in this lesson. The four control teachers too will be asked to prepare a discussion lesson to be taped (control group was not utilized).

2. On the second day, the teachers will teach the practice lesson to their entire classes and this lesson will be filmed on videotape. This film will be preserved as pre-test information and data from this tape will be analyzed.

The experimental teachers will then view the first instructional film which describes three specific questioning techniques (15 minutes).

The teachers then view the first model film. The model film shows another teacher conducting a model lesson.

The teachers are then asked to prepare a short lesson based on the current classwork and designed to apply the skills seen on the instructional and model films.

3. On the third day, the first microteaching session will be held. The teacher conducts the lesson she has planned with 5 to 8 of her own pupils. This presentation is recorded on videotape. The pupils then return to the regular classroom and the teacher plays back the videotape in order to study her own behavior. During this first playback the teacher is instructed to study her overall performance and identify specific aspects of the lesson that could be improved. Since viewing oneself on videotape often brings about an emotional reaction, the teacher is not asked to focus closely upon specific skills during this viewing. The teacher then replays her own lesson for a second time, this time using a checklist in order to evaluate her performance on the specific behaviors covered on the instructional tape. The teacher is then instructed to replan her lesson and be prepared to reteach it during the next session.

4. On the fourth day, the teacher reteaches the lesson with different pupils from her class, and the lesson is again recorded on videotape. The teacher then watches the playback of the lesson, first for general effect and then to evaluate her own performance. After school on the fourth day, the teacher along with another teacher taking the course, view the replays of the lesson they taught that day for the third time for the purpose of giving each other further feedback and suggestions for improving their performance. Although the teacher is encouraged to view the third replay of her revised lesson with another teacher, she has the option of viewing this replay alone.

These steps will be repeated for each segment of Minicourse I until the course is completed. A schedule showing the steps for the entire course will be set up listing completion dates for each phase of the course (see Figure 2).

5. When Minicourse I has been completed, the teachers will be asked, once again, to prepare a lesson emphasizing questioning skills. All eight teachers will be videotaped during this lesson, and the videotape will be analyzed (four teachers were actually taped).

EVIDENCE

The following are the dependent variable data that will be accumulated from pre and post tapes. In each case, a numerical measurement will be obtained. The following represent relevant variables that are essential in the questioning process as defined by the Far West Regional Laboratory.

Behavior Compared:

1. Percentage of discussion time taken by teacher talk.
2. Number of times teacher used redirection.
3. Number of times teacher used prompting.
4. Number of times teacher used further clarification.
5. Number of times teacher used refocusing.

FIGURE 2 - MICROTEACHING SCHEDULE

A Microteaching In-Service Training Model

First Month

Pre Testing - Training Group and Control Group*

Equipment Set Up - Conference Room

Second Month

Introduction and Practice Sessions

Instructional Sequence I

Instructional Sequence II

Instructional Sequence III

Instructional Sequence IV

Third Month

Instructional Sequence V

Post Testing

After the Fifth Month a second Post Test time might be used.

*A Control Group was not utilized in final plan.

6. Number of times teacher repeated his/her own questions.
7. Number of times teacher repeated pupil answers.
8. Number of times teacher answered his/her own questions.
9. Length of pupil responses in words (based on 5 minute samples of pre and post tapes).
10. Number of 1-word pupil responses (based on 5 minute samples of pre and post tapes).
11. Length of teacher's pause after question (based on 5 minute samples of pre and post tapes).
12. Frequency of punitive teacher reactions to incorrect pupil answers.
13. Percentage of total questions that called for the high cognitive pupil responses.

TEST INSTRUMENTS AND DATA COLLECTION

1. The investigators will obtain a sample of each teacher's questioning technique during a typical discussion lesson. The teacher will plan a lesson emphasizing question techniques to be taught to her entire class. The investigators will use videotape recorders to record the teacher's use of Questioning Technique: A sample will be obtained before Minicourse I and after it is completed. Dependent variable data (See evidence section above) will be accumulated.

2. The investigators will obtain videotaped practice lessons in which the teacher will emphasize questioning techniques. This lesson will be taught with a small group of 5 to 8 children and will serve as a pre test. A similar videotape sample will be obtained following Minicourse I. In this case dependent variable data (See evidence section above) will be accumulated.

In summary, teachers Questioning behavior will be sampled on four occasions:

Pre and post testing --using videotape recorder in the teacher's actual classroom situation.

Pre and post testing using videotape equipment in the small group minicourse situation.

The investigators are anxious to determine the efficacy of the minicourse technique not only in small group situations but in the teacher's normal classroom situation. For this reason, these samples will be obtained in both situations.

ANALYSIS OF THE DATA

A comparison will be made of the dependent variable data by comparing the measures obtained by teachers on pre-test with those obtained on the post-test. The "t" test to determine whether there is a statistical difference between the means will be used at the .05 level of significance.

e.g. A teacher talks 58.6% of the time when an analysis is done of a videotaped sample of a teacher's lesson before she takes Minicourse I. Following the course, a videotaped sample of a teacher's lesson is obtained and it is found that the teacher talks 22% of the time in a discussion lesson. This difference is statistically significant. We can conclude that Minicourse I may have been effective in reducing teacher talk in a discussion lesson.

ORDERING MATERIALS

To order a minicourse or to inquire about the program one may write to:

Far West Laboratory for
Educational Research and Development
Hotel Claremont
Berkeley, California 94705

For your information, instructions and forms are included in Appendix A of this Manual. Special attention should be directed to items 1, 2, 3, 4, and 5, which are essential in undertaking the course.

The minicourse you order should be directed to your special needs or problems. The Far West Laboratory is developing 17 minicourse "packages" in all. Minicourse I is currently being disseminated and implemented throughout the United States. The following three courses are at the dissemination stage and should be ready by September, 1969.

Learning Skills that Encourage Language
Acquisitions in Deprived Kindergarten Children

Effective Questioning in a Classroom Discussion (grades 7-12)

Error Analysis Tutoring in Individualized Mathematics Programs

A complete list of the 17 minicourses (both current and future) is included in Figure 3.

FIGURE 3 - MINICOURSES BEING DEVELOPED

MINICOURSE NUMBER	TITLE OF MINICOURSE
1	Effective Questioning in a Classroom Discussion
2	Learning Skills that Encourage Language Acquisition in Deprived Kindergarten Children
3	Effective Questioning in a Classroom Discussion (7-12)
4	Verbal Classroom Interaction (7-12)
5	Error Analysis Tutoring in Individualized Mathematics Programs
6	Refresher Course for Effective Questioning in Classroom Discussion
7	Contingency Management
8	Organizing the Kindergarten for Small Group Instruction
9	Bloom's Cognitive Taxonomy Applied to Classroom Discussions (7-12)
10	Changing Teacher Behavior Towards Minority Group Pupils
11	Peer Tutoring in the Intermediate Grades
12	Teacher Behaviors that Stimulate Pupils to Increase their Observation Skills
13	Teacher Strategies that Increase Pupil Interaction
14	Improving Teacher and Pupil Skills in Discussing Controversial Issues
15	Introduction to the Teaching of Inquiry Skills
16	Teacher Behaviors that Stimulate Pupils to learn and Use Inquiry Procedures
17	Roleplaying (Discipline Problems in Intermediate Grades)

SECTION IV

TECHNICAL ASPECTS

Technical Instructions

The Micro-teaching course is unique in that the teacher must operate and use audio and video equipment on his own. In order to accomplish this, a training schedule must be set up and proper instruction by a competent person be given. This person will instruct teachers in the following areas:

a. Head cleaning of the video-tape recorder - this must be done daily. It would be advisable for the technician to do this.

b. Tape threading - This is no more difficult than threading an audio recorder. Frequent practice during the practice sessions will insure competency.

c. Video levels - a very simple meter adjustment. A teacher must adjust VTR to a 100% record level.

d. Audio levels - Microphone adjustments will be made on the Shure mixer. Using two microphones it will be necessary to adjust microphone #1 (Teachers) to number five and microphone #2 (Students) to number ten: then adjust output of mixer to number 10. After these adjustments it will then be necessary to adjust the VTR record level. This is accomplished by turning the audio-level knob until the needle just reaches the red section of the meter. At this time adjust the digital counter to zero.

e. Camera - Camera will remain in a fixed position (see figure 4). Once the camera has been adjusted and focused it will then only be necessary for the participating teacher to turn it on.

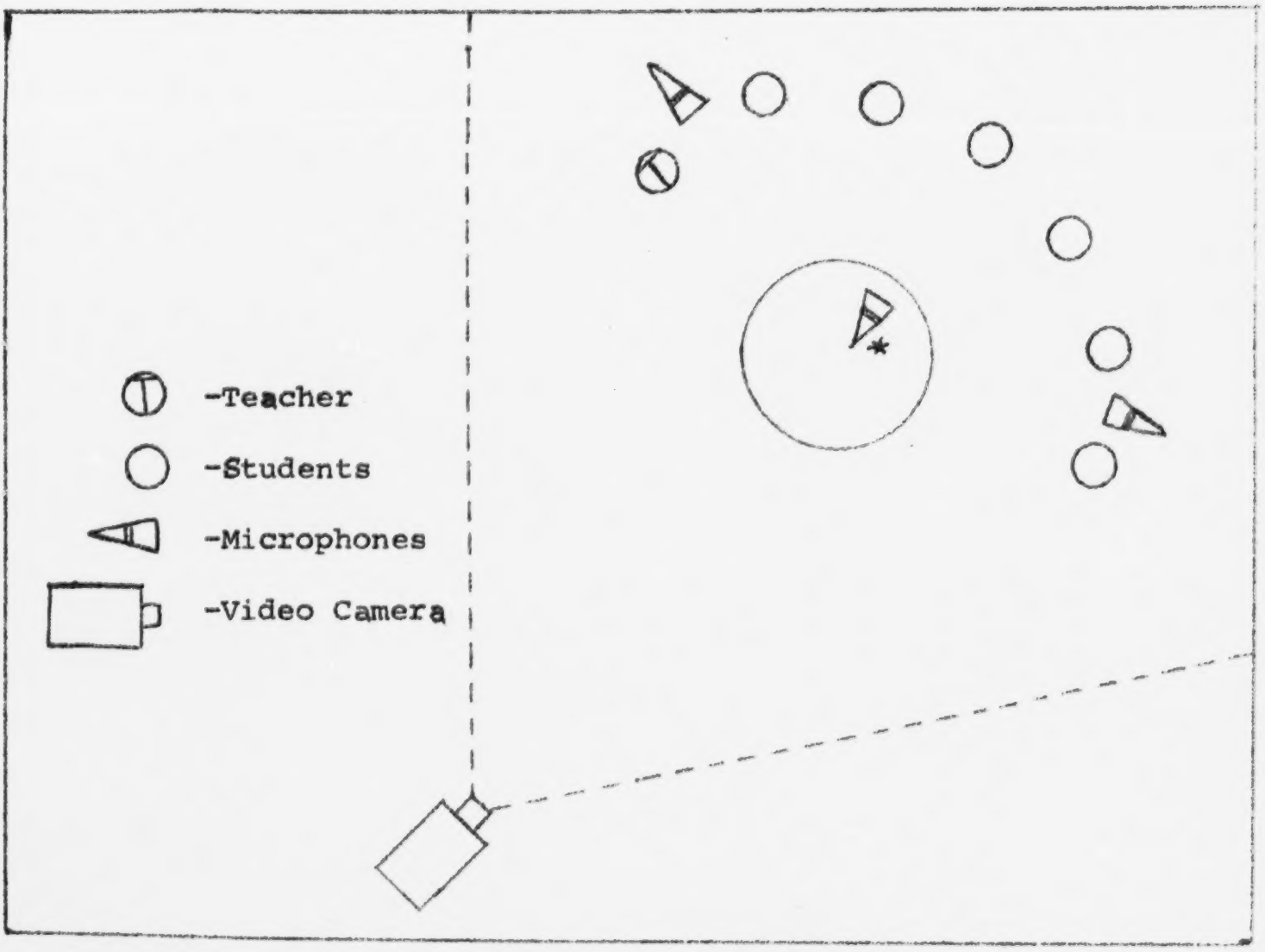
At this point the teacher is ready to record the lesson. With the students in their proper places the teacher starts the video tape recorder, puts it in the record position, and assumes her place.

Upon completion of the record session the teacher will then play back the video tape using the following procedures:

a. Rewind tape until the digital counter is in the zero position.

b. Turn on video receiver.

c. Turn on the video recorder to play position and adjust tracking knob until the meter reads at its highest position. Then adjust volume control knob until the second level on the receiver is sufficient.



*If only one microphone is available, place it here.

Figure 4 - Suggested Camera and Microphone Arrangements

NOTE: Face mikes toward the children and teacher, not away from them.

Place chairs close together in a semicircle.

Place children with weak voices closest to mike.

Camera will need to be at a distance from the set.

Camera should not face directly into the light source

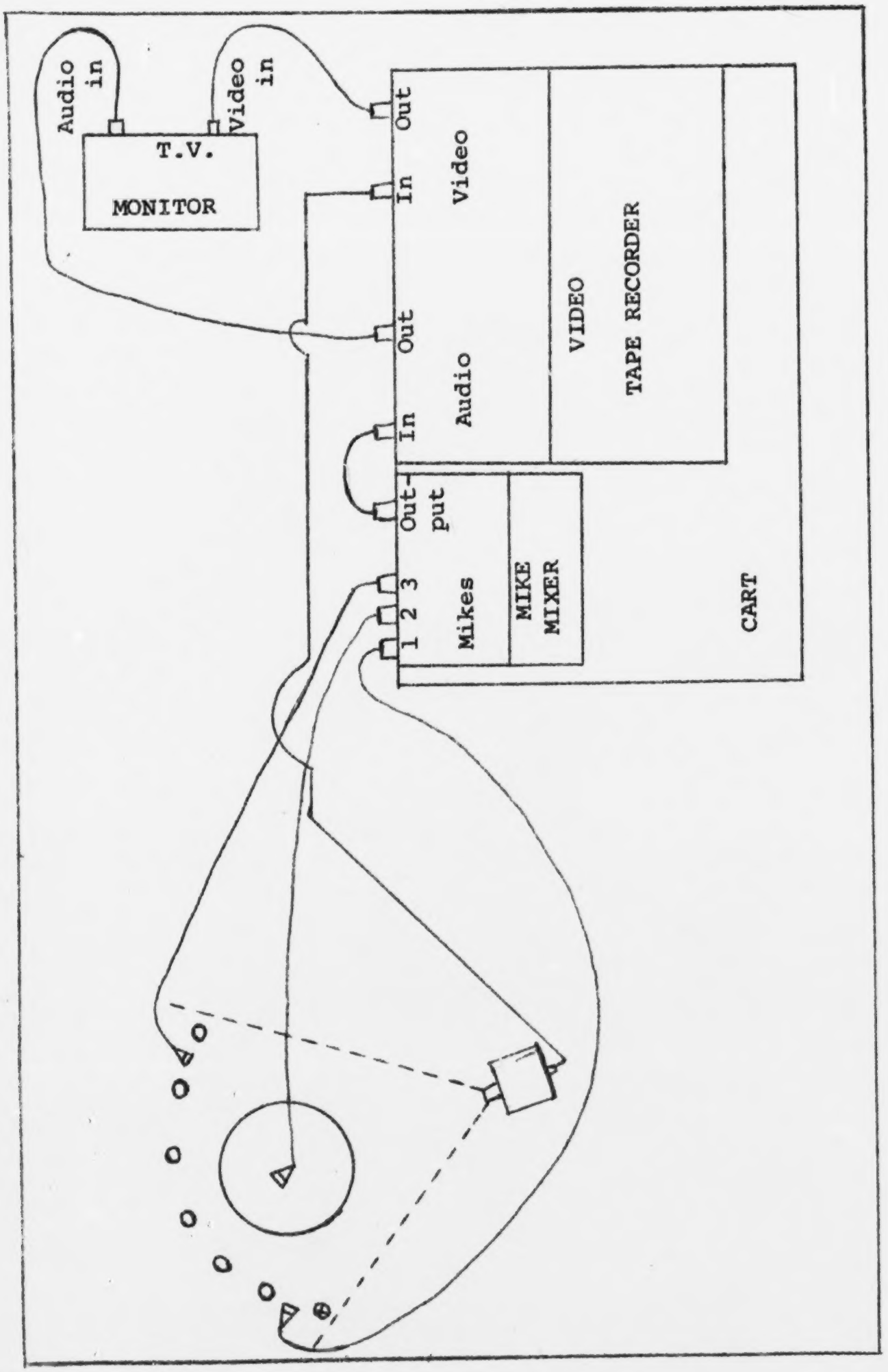


Figure 5 -- Sample Studio

The studio may be the rear of a classroom, but preference should be given to a more permanent location.

SECTION V

EVALUATION OF THE DEMONSTRATION PROJECT

The minicourse was developed and tested by Walter R. Borg and his staff at the Far West Laboratory for Educational Research and Development in Berkeley, California, supported by funds from the U.S. Office of Education. Forty-eight teachers in the Berkeley area served as on-the-job subjects for the initial test, Minicourse I.

The analysis of changes in teacher behavior from this test as reported by Borg in "The Minicourse: Rationale and Uses in the Inservice Education of Teachers" is given in Talbe I and is described below:

One of the objectives of the course was to reduce the percentage of time during class discussion when the teacher is talking. Previous studies have shown that teachers talk as much as 70 per cent of the time during class discussions, thereby severely restricting the amount of time available for pupil contributions. Analysis of the videotapes of the 48 teachers who took Minicourse I during the field test revealed that on the pre-course tapes the teacher talk averaged nearly 52 per cent of the time, while on the post-tapes teacher talk averaged 28 per cent of the time. Teacher talk was nearly halved on the lessons recorded after completing the course.

One of the behaviors taught in Minicourse I is redirection. Redirection is the technique of framing questions in such a way that the question can be directed to several pupils rather than a single pupil. The teacher asks the question and redirects it to a number of pupils each of whom contributes to a complete answer. Redirection has the advantage of increasing pupil participation and direct interaction among pupils in the discussion situation. For the 48 teachers in the field test, the mean number of redirections made by teachers in the twenty-minute pre-tape was 27. On the post-tape these teachers used redirection an average of 41 times, an increase of about 40 per cent in the use of this specific technique.

Three negative behaviors which the course attempts to reduce or eliminate are repeating the question, repeating the pupil's answer and answering one's own questions. Analysis of pre-tapes indicated that the average teacher repeated his or her questions 14 times in the twenty-minute lesson. On the post-tapes this figure was reduced to 5 repetitions.

Repeating pupil answers is considered an undesirable technique because it increases the amount of discussion time taken up by the teacher and also conditions pupils to listen to the teacher rather than to each other since they can expect the pupil's answer to be repeated by the teacher. On the pre-tapes, the average teacher repeated pupil answers 31 times, while on the post-tapes, the average

TABLE I

PRELIMINARY RESULTS FROM ANALYSIS OF MINICOURSE 1, PRE-TAPES AND POST-TAPES

Behavior Compared	Pre Tape Mean	Post Tape Mean	t	Sig. Level
1. Percentage of discussion time taken by teacher talk.	51.64	27.75	8.95	.001
2. Number of times teacher used redirection.	26.69	40.92	4.98	.001
3. Number of times teacher used prompting.	4.10	7.17	3.28	.001
4. Number of times teacher used further clarification.	4.17	6.73	3.01	.005
5. Number of times teacher used refocusing.	.10	.02	.00	NS
6. Number of times teacher repeated his/her own questions.	13.68	4.68	7.26	.001
7. Number of times teacher repeated pupil answers.	30.68	4.36	11.47	.001
8. Number of times teacher answered his/her own questions.	4.62	.72	6.88	.001
9. Length of pupil responses in words (based on 5 minute samples of pre and post tapes).	5.63	11.78	5.91*	.001
10. Number of 1-word pupil responses (based on 5 minute samples of pre and post tapes).	5.82	2.57	3.61*	.001
11. Length of teacher's pause after question (based on 5 minute samples of pre and post tapes).	1.93	2.32	1.90	.05
12. Frequency of punitive teacher reactions to incorrect pupil answers.	.12	.10	.00	NS
13. Percentage of total questions that called for higher cognitive pupil responses.	37.30	52.00	2.94	.005

*Means would have been approximately 4 times larger if entire tapes had been analyzed, t-test would have been higher.

teacher repeated pupil answers only 4 times.

The disadvantage of the teacher answering his or her own question is that if carried to an extreme, this behavior results in the teacher giving a monologue rather than conducting a discussion lesson. In any case, it deprives pupils of the chance to participate in the discussion and increases the percentage of teacher talk. Pre-tapes showed that the average teacher answered his or her own questions 5 times in the twenty-minute lesson. The post-tape mean was less than 1.

Probing describes a set of techniques that the teacher can use after the pupil's initial response to a question in order to lead the pupil to a more adequate or complete response. Minicourse I attempts to increase the teacher's use of three such techniques. These are: Prompting in which the teacher gives the pupil clues or asks him leading questions. Further clarification in which the teacher attempts to get the pupil to clarify, elaborate or explain his initial response, and Refocusing in which the teacher attempts to get the pupil to relate his initial response to other topics that the class has studied.

On the first two of these behaviors, statistically significant differences were obtained but the magnitude of these changes is not very impressive. Teachers made little use of these techniques before taking the course and were not making effective use of them after the course. As for the refocusing, the behavior was virtually non-existent in either the pre or post tapes. In most discussion lessons opportunities to use refocusing are limited. The failure of the course to develop this skill may indicate that the Minicourse model is not useful in shaping teacher behaviors that can only be practices infrequently in a microteaching lesson.

The course also attempted to train teachers to pause for 5 seconds after asking a question and before calling on a pupil. Teachers did not significantly change the length of their pause as a result of the course.

Another objective of the course was to train teachers to ask questions that call for longer pupil responses and require pupils to use higher cognitive processes. A word count of pupil responses on the pre-test tapes showed the average length to be 6 words. This was increased to 12 words on the post-tapes. On the pre-tapes, 63 per cent of teacher questions called for specific facts and 37 per cent called for higher cognitive processes. In the post tapes, fact questions were reduced to 48 per cent and higher cognitive questions increased to 52 per cent.

In the present demonstration project four elementary grade teachers from the Stagecoach Elementary School, Middle Country School District, New York, were pre-tested in September and October 1968, and were post-tested in March 1969 after having taken Minicourse I. An

analysis of changes in teacher behavior for six variables has been completed and results are given in Table II.

Analyses of the videotapes of the four teachers who took Minicourse I revealed that on the pre-course tapes the average teacher talk was 58 per cent of the time, while on the post-test tapes the average teacher talk was reduced to 35 per cent of the time. This reduction was significant at the .01 level.

The mean number of redirections made by teachers in the twenty-minute pre-tape was 19. On the post-tape these teachers used redirection an average of 29 times. Although this represents an increase of about 50 per cent, this increase was not found to be significant.

The number of times teachers repeated pupil answers was 25 on the pre-test, while on the post-test the average was 10 times. Pre-tapes showed that the average teacher answered his own questions about 6 times in a twenty-minute period. This figure dropped to about 1 in the post-tape. A count of the length of pupil responses in words on the pre-tapes showed the average length to be about 9. This count rose to 16 on the post-tape. None of these differences were statistically significant.

Of the six behaviors studied in this project, although all showed gains in the direction desired, only one reached the .05 level of significance (actually .01). Various factors may account for this lack of statistical significance, the major one being the limited number of subjects, only four. An analysis of the data shows that on two variables one teacher accounted for a substantial gain while the gains for the other three were minimal. Such a condition would result in a fairly good size average or mean gain when in reality the gain was made by one teacher not the four. A test of statistical significance points out such a discrepancy.

If the gains noted in this evaluation were all significant, no claim could have been made for the value of Minicourse I in producing these gains, since no control group was employed. Conceivably, these gains might have occurred normally during the period between September and April. It is recommended that future evaluations of Minicourse I employ a larger number of subjects, and that a control group be included.

The four teachers who participated in the demonstration project were most enthusiastic about Minicourse I. The specific skills that the course focused on were considered significant, well conceived and worthwhile.

TABLE II

AN EVALUATION OF THE PRE AND POST TAPES

USED IN THE MICROTEACHING AT STAGECOACH ELEMENTARY SCHOOL

	Behavior Compared	Pre Tape Mean	Post Tape Mean	t	Sig. Level
1.	Percentage of discussion time taken by teacher talk.	58.25	35.37	4.61	.01
2.	Number of times teacher used re-direction based on a 20 minute sample.	19.0	29.25	1.93	NS
3.	Number of times teacher repeated his/her own question based on 20 minute sample.	12.5	4.75	2.2	NS
4.	Number of times teacher repeated pupil answers based on a 20 minute sample.	25	10	2.11	NS
5.	Number of times teacher answered his/her own questions based on 20 minute sample.	5.75	.75	1.76	NS
6.	Length of pupils responses in words based on five minute samples.	8.77	16.1	1.7	NS

Although the consensus of opinion was that beginning teachers could benefit most from the program, all agreed that it has great value for the experienced teacher.

Some typical comments include:

"For the beginning teacher it's an excellent training technique. However, for any teacher, beginning or experienced, it's certainly worthwhile. It certainly made me more aware of some of the things I was doing. Not so much that they were wrong but I could have been doing so much better."

"All teachers could benefit from this course."

"I think every teacher should sit down from time to time..... We learn in theory that we should sit down and evaluate ourselves and this course is an excellent way to do it."

"I think any teacher could profit from this course. I know I did, very much."

All four teachers felt that the minicourse would be extremely useful in teacher training institutions but even if so used its in-service use in the field would still be needed.

"If it is used in college it could still be effective as a review in later years...as a self evaluation which is what it really is."

"This course is something you could profit from by going through more than once. It could serve as a continuing evaluation of the use of accepted teaching techniques."

The few negative reactions to the project involved mostly technical details. Two teachers remarked that the musical tones in the model lessons, which signalled the beginning and ending of a particular type of behavior, were disturbing. Another considered the model lessons a little too long. "Technical problems" with the use of the video tape equipment was also mentioned, but these were considered minor deficiencies in what the teachers felt was an extremely useful and worthwhile project.

APPENDIX A

APPLICATION FORM FOR PARTICIPATION OF A SCHOOL DISTRICT IN MINICOURSE I

Far West Laboratory for Educational Research and Development
1 Garden Circle, Hotel Claremont, Berkeley, California 94705 415:814-9710

Minicourse I is designed to help 4th, 5th and 6th grade teachers develop questioning skills in discussion lessons. The course has been tested extensively and our research provides solid evidence that it brings about important changes in the teacher's classroom behavior, when used correctly. There is no evidence that the course will work when used in part or when significant changes are made in the basic course design. Thus, in order to insure that teachers are given the course in a form that will bring about substantial improvement in their teaching behavior, it has been necessary for the Far West Laboratory for Educational Research and Development to set up certain requirements which the school districts must meet before the course materials are released to the district. These are as follows:

Requirements for Participation

1. Teachers taking the course need 75 minutes of released time per day during regular school hours for the 15 days of the course. Since each teacher within a given school must be released at a different hour in order to use the VTR equipment, one substitute can cover 4 teachers.

2. A portable videotape recording system including videotape recorder, microphones, camera and monitor is needed for each 4 teachers taking the course concurrently. Each teacher will need a 15 minute videotape for the microteaching phase of the course (tape is reusable).

3. Each school in which the course is presented must have a small room available (at least 12' x 14') in which to conduct the microteaching and house the video equipment. Since it is not practical to store the equipment between microteaching sessions, the room should be reserved for the entire time the course is in progress.

4. Each school district should appoint a person to supervise and coordinate the course. The coordinator will receive all written materials and make distribution to the participating teachers. He will arrange schedules, brief teachers and supervise the overall operation of the course. If employed full time, one person can coordinate the course in 3 to 4 schools.

5. Each participating school will need a 16mm sound projector and screen while the course is in progress. This equipment is used on every third day during the course. The Laboratory will lend

a set of films and provide not more than 12 sets of teacher handbooks and other printed materials needed by the schools, at no cost. If you plan to use the course with more than 12 teachers, you are free to duplicate the materials in whatever quantity is necessary. The only charges are the cost of shipping the films and printed materials to and from your school plus $25.00 for the cleaning and operational maintenance of the films after completion of the course.

6. A follow-up program is an integral part of the course. Each month the teacher will receive a short follow-up lesson to assist her in reviewing one or more of the skills covered in the basic course. There are eight such follow-up lessons. In addition to the lessons, a refresher course is included in the follow-up program. This course should be given 6-8 months following completion of the Minicourse. It requires 75 minutes per day for four days and includes two instructional films, two model films and two microteaching lessons. The eight follow-up lessons and the refresher course provide a nine-month follow-up program. Except for the refresher course, use of videotape equipment is not required in the follow-up program.

7. The course can be offered in two or three schools simultaneously by staggering the schedule in use of the kinescopes.* If you would like to use the course in more than one school, please list the names of the schools on the attached form. This will necessitate the use of the kinescopes for 3 additional school days plus the 15 required for one school since the second school would start the course 3 days after the first school.

8. The Laboratory has only 17 sets of the films which are required to conduct this course. If you plan to use the course with a large number of teachers or if we cannot schedule the loan of a set of kinescopes at the time you need them, you may wish to purchase a set. The cost of one complete set (15 reels) is $324.25. The film processing company quotes one week delivery to the furthest point in the United States and ships via library material special delivery unless otherwise designated by the customer. 5% sales tax has to be added to the initial price for shipment within the state of California.

*Although we make reference to "films" throughout this form, they are actually kinescopes made from audio-visual tapes but have the same use as regular films.

Please return to: Far West Laboratory for
Educational Research and
Development
Hotel Claremont,
1 Garden Circle
Berkeley, California 94705

COORDINATOR _____ _____
NAME TITLE

_____ _____
School or Dept. P.O. Box or Street Address

_____ _____
City State Phone

Proposed Starting Date_____

Alternate Dates (1) _____ (2)_____

Proposed Completion Date (See Page 27, Item 7)_____
(Remember to allow extra days if holidays, etc. intervene.) We will allow extra time if we cannot send kinescopes by the date of your first choice.

PLEASE RETURN THE FILMS (KINESCOPES) IMMEDIATELY UPON COMPLETION OF COURSE TO AUDIO-VISUAL SERVICES. A label with correct address will be furnished with films.

SCHOOLS AND TEACHERS TO PARTICIPATE

1. _____ _____
School Principal

_____ _____ _____
Street Address City State

_____ _____
Grade Levels Number of Full Time Teachers on Staff

Participating Teachers	Name	Years Teaching	Age
1)	Mr./Mrs./Miss/		
2)	Mr./Mrs./Miss/		
3)	Mr./Mrs./Miss/		
4)	Mr./Mrs./Miss/		

2. _____ _____
School Principal

_____ _____ _____
Street Address City State

_____ _____
Grade Levels Number of Full Time Teachers on Staff

Participating Teachers for School #2.

	Name	Years Teaching	Age
1)	Mr./Mrs./Miss/		
2)	Mr./Mrs./Miss/		
3)	Mr./Mrs./Miss/		
4)	Mr./Mrs./Miss/		

3. _____ _____
School Principal

_____ _____
Street Address City State

_____ _____
Grade Levels Number of Full Time Teachers on Staff

Participating Teachers	Name	Years Teaching	Age
1)	Mr./Mrs./Miss/		
2)	Mr./Mrs./Miss/		
3)	Mr./Mrs./Miss/		
4)	Mr./Mrs./Miss/		

4. Do you wish to borrow ___ or purchase ___ the kinescopes needed to conduct the course? If you wish to purchase, please indicate number of sets here _____. We will send you information on the procedure for purchasing.

SUPERINTENDENT _____ _____
Name District

_____ _____ _____
Street Address or P.O. Box City State

_____
Phone

I herein apply for participation in Minicourse I of the Teacher Education Program, Far West Laboratory for Educational Research and Development, and agree to the conditions for participation stated above.

_____ _____

Superintendent's Signature Date

APPENDIX B

MICROTEACHING

-a new beginning for beginners

DWIGHT W. ALLEN and RICHARD E. GROSS, School of Education, Stanford (California) University.
from NEA JOURNAL - December, 1965

A program of real though scaled-down teaching experience called microteaching was recently developed for neophyte intern teachers by the School of Education at Stanford University. In the fall, the participants, all of whom are graduate students in secondary education, will have responsibility for teaching two full-sized classes and be paid a regular salary for their work. In the summer microteaching clinic, however, they teach from one to five students for periods of from five to twenty minutes, depending upon the purpose of the lesson and previous microteaching experience.

Each year, the clinic prepares some 125 candidates in English, modern languages, physical education, mathematics, natural science, music, art, and social studies. At the same time that the participants are involved in microteaching, they pursue regular course work leading to an M.A. degree and a secondary school teaching credential.

The microteaching clinic consists of three phases: (a) a tutoring program, (b) individual microlessons, and (c) microclasses.

In the first microteaching clinic, in the summer of 1964, each M.A. candidate tutored a student from a nearby secondary school who was having difficulty in some aspect of social studies. Each of the students had volunteered for special help in the summer and each had arranged for his own transportation to the campus at a time convenient to his tutor. His tutor was a candidate whose preparation was particularly strong in the student's area of difficulty-government or world history, for instance.

After an initial session with the student and a study of available school records, the candidate planned a specific program of remediation in consultation with his supervisor from the University staff. In a series of hour-long tutoring sessions twice a week, the tutor proceeded to refine his original diagnosis of the student's problem and to treat the student's learning difficulty accordingly.

The clinic staff encouraged candidates to be as creative as possible in their approaches to the various difficulties of their students. Some remedial programs developed by candidates that summer included using current events as a means of studying the functions of

the different branches of the federal government and using fiction as a means of building understanding of the causes of the Civil War.

Most intern candidates commented that the tutoring experience was particularly helpful because it gave them an understanding of the difficulties involved in securing reading materials suitable to the student's level of comprehension. In evaluating their teacher preparation program at Stanford, a large majority of interns rated the tutoring program as a "very strong" element.

The individual microlesson phase lasts for three weeks. At least twice a week during this period the candidates teach five or ten minute lessons, built around a single aim or concept, to three or four students. These students come from nearby secondary schools and are paid for their participation in the clinic.

The candidates face a different group of students for each microlesson in order to give them the experience of teaching students from different grades, with various backgrounds and levels of ability.

In addition to focusing the lesson on a single important concept, candidates are taught to develop a specific teaching behavior, or "technical skill." For the first several lessons, they concentrate on preparing their students to learn--a technical skill we call "set induction."

Half of the lessons are recorded on videotape and played back at the completion of the microlesson to give the teacher an immediate picture of his performance and of the students' reaction to it. The videotape also plays an important part in the supervisor's critique following the lesson. Having been taught how to use the "Stanford Teacher Competence Appraisal Guide," the students as well as the supervisor take part in evaluating the teacher. Copies of their ratings are given to the candidate so that he can compare his self-evaluation against the evaluations of his students and his supervisor.

Immediately following the critique, the candidate teaches the same lesson to a different group of students to see if he can use the suggestions to improve his performance. In most cases, performance improves dramatically from the first microlesson to the second.

In this phase of the clinic, candidates gain teaching experience in a situation much less complex than that found in a regular class. This removes from their first genuine teaching encounter much of the trauma normally associated with the early days of practice teaching.

In the third and final phase of the clinic, which covers the last four weeks, the candidates are divided into teams of three or four. With the assistance of a supervisor, each team plans a unit of work for four or five students. They then present the unit in fifteen 20-minute sessions. In order to provide a realistic classroom situation and learning continuity, the same students are present

for all fifteen lessons, as a microclass.

Each candidate in turn teaches one lesson while the other members of his team look on. At the end of a lesson, the candidate participates in a critique by the supervisor and the other members of his team. Occasionally, they all observe a videotape replay of the lesson in order to check on their judgments and recollections. The students' evaluations of the lesson are also considered in the critique.

After the critique, the team members discuss possible changes in the next day's lessons and in the long-range objectives of the unit. Each candidate has to be alert throughout the observing and critique sessions because he will be teaching one of the future lessons related to the lesson he has observed previously.

The microclass experiences serve three primary purposes: (a) to give candidates experience in developing a unit (b) to impress upon them the need for advanced planning and regular daily planning combined with enough flexibility to adapt or change plans when needed; and (c) to expose them to students for longer periods of time than during the microlesson phase.

The microclasses also teach the need for specific clearly defined objectives in any teaching situation. In the microclass, candidates have an empirical laboratory in which they can correct for overly ambitious or unrealistic aims and poor instructional strategies without depriving an entire class of an important learning experience. It should be emphasized that the secondary school students participate voluntarily on their own vacation time and are paid a minimal stipend. At worst, they lose nothing for the experience; at best, they receive valuable help or enrichment.

Microteaching evolved from a demonstration lesson which was incorporated into Stanford's original experimental graduate teacher education program seven years ago. As the process has been refined, its acceptance has grown. Seventy-nine percent of the 1964-65 interns rated the microteaching clinic as the strongest part of their preinternship program.

Perhaps the most important aspect of microteaching has been its usefulness of predicting eventual success in the normal classroom. A candidate's performance in microteaching provides an accurate indication of how successfully he will perform when he takes charge of two regular classes in the fall.

The possibilities of microteaching have just begun to be identified. Under a grant from the Kettering Foundation, experiments are under way to determine its effectiveness as a selection device for teacher employment and as an in-service training device with experienced teachers. It is obvious that the extent of control and the

simplicity of logistics in microteaching lessons make it promising for many applications of practice in teaching. It also has potential as a research tool to investigate the technical skills of teaching and other empirical questions about teaching and learning. Its major use in preservice training programs will continue to be expanded.

Although the initial teaching encounter is scaled down, microteaching still retains sufficient realism to help bridge the traditional gap between theory and practice. Thus, it helps to turn out beginning teachers prepared for at least some of the hard and complex realities of that first September.

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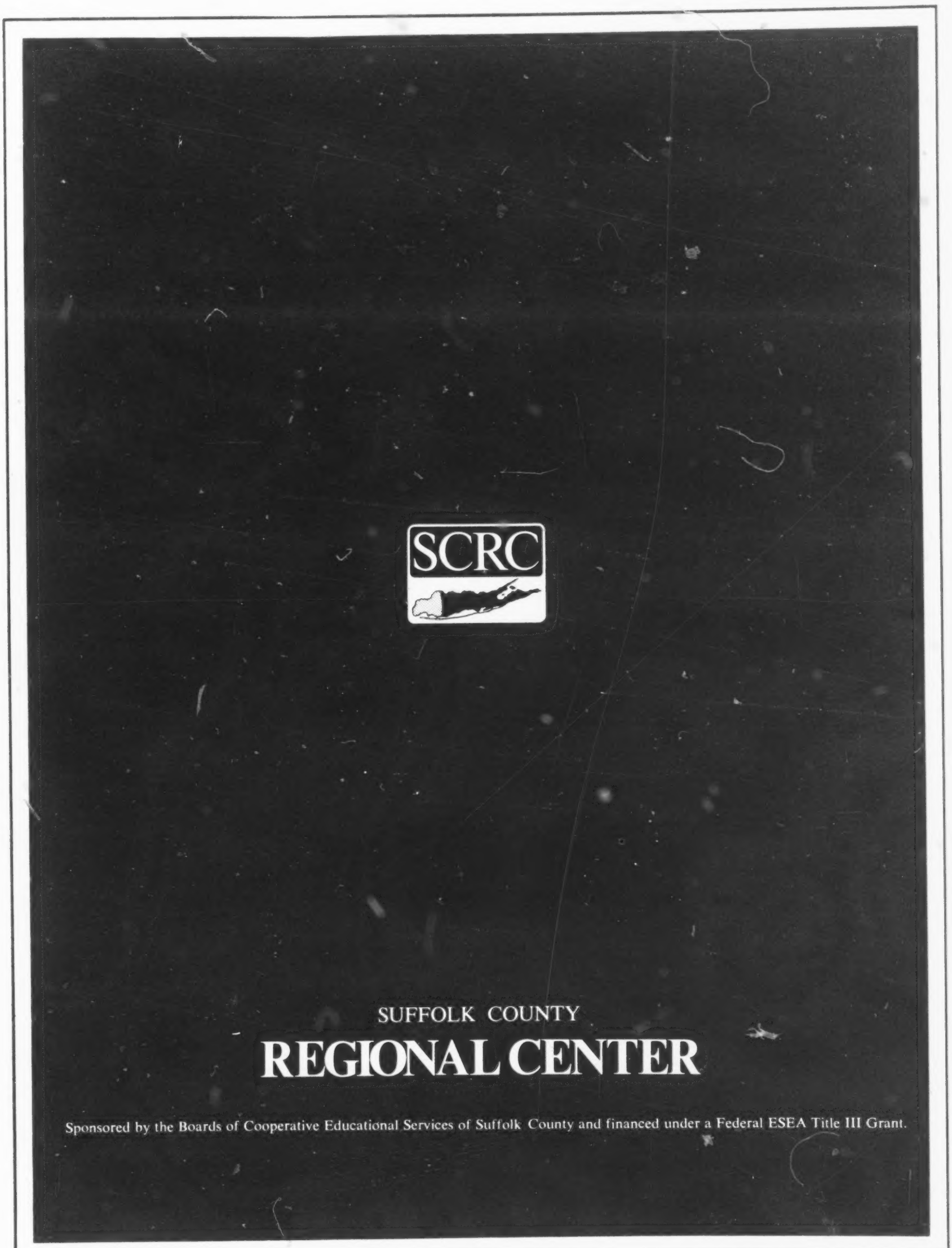

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